

**What is claimed is:**

1. A classifier assembly for mounting on a center shaft defining an axis of rotation and configured for rotational motion within a process chamber of a material size reducing system, the classifier assembly comprising:
  - 5 (a) an elongate arm configured for mounting on the center shaft in such a manner as to extend radially outward from the center shaft; and
  - (b) a labyrinthian sealing arrangement operatively associated with a radially outer portion of the arm and configured for limiting the egress of particles from the process chamber based on particle size during rotational motion of the center shaft.
- 10 2. A classifier assembly as recited in Claim 1, further comprising a plurality of elongate arms.
3. A classifier assembly as recited in Claim 2, further comprising a flange for mounting the plurality of elongate arms to the center shaft.
- 15 4. A classifier assembly as recited in Claim 1, wherein the labyrinthian sealing arrangement comprises:
  - 40 (a) an annular rotator including an axially projecting, radially inner ring and a plurality of axially projecting members along a radially outer circumference of the rotator;
  - and

- (b) an annular stator including an axially projecting portion, the axially projecting portion defining a radially inner surface and opposing radially outer surface, the stator being configured and dimensioned for mounting in the process chamber in such a manner as to be positioned axially adjacent to the rotator with the radially inner surface of
- 5 the axially projecting portion in a radially adjacent relationship with respect to the radially inner ring of the rotator and the radially outer surface of the axially projecting portion in a radially adjacent relationship with respect to the plurality of axially projecting members along a radially outer circumference of the rotator.
- 10 5. A system for limiting particle egress in a material size reduction device having a chamber with a center shaft mounted for rotational motion therein, the system comprising:
- (a) an elongate arm configured for mounting on the center shaft in such a manner as to extend radially outward from the center shaft; and
- (b) a labyrinthian sealing arrangement operatively associated with a radially
- 15 outer portion of the arm and configured for limiting the egress of particles from the chamber based on particle size during rotational motion of the center shaft.
6. A system as recited in Claim 5, further comprising a plurality of elongate arms.

- 20 7. A system as recited in Claim 6, further comprising a flange for mounting the plurality of elongate arms to the center shaft.

8. A system as recited in Claim 5, wherein the labyrinthian sealing arrangement comprises:
- (a) an annular rotator including an axially projecting, radially inner ring and a plurality of axially projecting members along a radially outer circumference of the rotator;
- 5 and
- (b) an annular stator including an axially projecting portion, the axially projecting portion defining a radially inner surface and opposing radially outer surface, the stator being configured and dimensioned for mounting in the process chamber in such a manner as to be positioned axially adjacent to the rotator with the radially inner surface of
- 10 the axially projecting portion in a radially adjacent relationship with respect to the radially inner ring of the rotator and the radially outer surface of the axially projecting portion in a radially adjacent relationship with respect to the plurality of axially projecting members along a radially outer circumference of the rotator.

- 15 9. A coal pulverizer having a grinding chamber and a center shaft defining an axis of rotation and configured for rotational motion within the grinding chamber, the coal pulverizer including a classifier assembly comprising:
- (a) an elongate arm mounted on the center shaft in such a manner as to extend radially outward from the center shaft; and
- 20 (b) a labyrinthian sealing arrangement operatively associated with a radially outer portion of the elongate arm and configured for limiting the egress of coal particles

from the grinding chamber based on particle size during rotational motion of the center shaft.

10. A coal pulverizer as recited in Claim 9, further comprising a plurality of elongate  
5 arms.

11. A coal pulverizer as recited in Claim 10, further comprising a flange for mounting  
the plurality of elongate arms to the center shaft.

10 12. A coal pulverizer as recited in Claim 9, wherein the labyrinthian sealing  
arrangement comprises:

(a) an annular rotator including an axially projecting, radially inner ring and a  
plurality of axially projecting members disposed along a radially outer circumference of  
the rotator; and

15 (b) an annular stator including an axially projecting portion, the axially  
projecting portion defining a radially inner surface and opposing radially outer surface, the  
stator being configured and dimensioned for mounting in the process chamber in such a  
manner as to be positioned axially adjacent to the rotator with the radially inner surface of  
the axially projecting portion in a radially adjacent relationship with respect to the radially  
20 inner ring of the rotator and the radially outer surface of the axially projecting portion in a  
radially adjacent relationship with respect to the plurality of axially projecting members  
along a radially outer circumference of the rotator.

13. A coal pulverizer as recited in Claim 12, wherein the axially projecting members disposed along a radially outer circumference of the rotator are substantially equally spaced along the radially outer circumference of the rotator.

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14. A coal pulverizer as recited in Claim 9, wherein crushed coal is supplied to the grinding chamber from a crusher chamber including a swing hammer assembly operatively associated with the center shaft for crushing coal.

10 15. A coal pulverizer as recited in Claim 9, wherein the grinding chamber further includes a plurality of stationary pegs and an assembly having a plurality of grinding clips operatively associated with the center shaft and configured for grinding coal.

15 16. A coal pulverizer as recited in Claim 9, wherein the egress of coal particles from the grinding chamber is received by a fan chamber including a fan assembly operatively associated with the center shaft and configured for transporting coal particles entrained with air.

20 17. A coal pulverizer as recited in Claim 9, wherein the labyrinthian sealing arrangement limits the radially outward egress of unacceptably large sized coal particles from the grinding chamber.